

DETAILED ACTION

Summary

This non-final office action replaces the non-final office action mailed 10/29/2009.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 13, 14, 17, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Bechthold et al. (US Patent 3,633,887) (hereinafter “Bechthold”).

3. In regards to claim 13, Bechthold teaches

a nozzle piece (distributing head 22) attached to a nozzle tube (inner tube 21) or forming one entity with said nozzle tube, the nozzle piece comprising a nozzle chamber (central passage 22d) and a horizontally extending nozzle channel (atomizing and mixing chamber 32) ending at a blow opening (lateral opening 30) of said nozzle, said nozzle chamber and said nozzle channel being limited from above by a lid (upper body 22a); and

a protecting cover (disk 33) attached outside the lid (by axial stud 34) for minimizing cooling of the outer surface of the nozzle piece due to fluidizing gas blown through the nozzle into the fluidized bed gasifier or combustor (col. 5, lines 52-71). See Figure 2.

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4. In regards to claim 14, Bechthold teaches wherein said protecting cover (disk 33) is attached spaced apart from the lid (forming gap 36).

5. In regards to claim 17, Bechthold teaches heat insulation (gap 36) arranged between the lid (upper body 22a) and the protecting cover (disk 33). See col. 5, lines 59-67.

6. In regards to claim 18, Bechthold teaches wherein the protecting cover (disk 33) is attached to the lid (upper body 22a) at all sides, except for the one on the blow opening side (the nozzle is open on all sides, see Figure 2a) of the nozzle.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bechthold (US Patent 3,633,887) as applied to claim 13 above.

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10. In regards to claim 24, Bechthold teaches wherein the protecting cover (disk 33) is attached by an axial stud (34) to the lid (upper body 22a).

11. Bechthold does not teach wherein the protecting cover (disk 33) is attached by welding to the lid (upper body 22a). However, Bechthold teaches welding to attach the tubes (31) to the inner wall of passages (22d) at 31a (col. 5, lines 60-61) and outer tube (20) to gas distributor plate (23a) at 20a (col. 5, lines 38-41). Therefore, welding the disk (33) to the upper body (22a) would have been the simple substitution of a known attachment technique, and is unpatentable over Bechthold.

12. Claims 15, 16, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bechthold (US Patent 3,633,887) as applied to claim 13 above, and further in view of Zugner (US Patent 4,779,547).

13. In regards to claim 15, Bechthold teaches wherein said protecting cover (disk 33) comprises a cover plate (disk 33).

14. Bechthold does not teach ribs arranged at least to the periphery of the cover plate.

15. In the analogous art of air supply nozzles for fluidized bed furnaces, Zugner teaches a nozzle (Figure 1) with a lid (13) and a protecting cover (wear resisting ring 14 and refractory concrete 15) wherein the protecting cover comprises a cover plate (refractory concrete 15) and ribs (wear resisting ring 14) arranged at least to the periphery thereof for the benefit of providing wear protection for the nozzle through the

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ring forming a void to be filled by the refractory concrete. See Figure 1 and col. 2, lines 48-52.

16. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the ring and concrete of Zugner with the nozzle of Bechthold for the purpose of providing wear protection for the nozzle.

17. In regards to claim 16, Bechthold teaches a protecting cover (disk 33) attached to the lid (upper body 22a).

18. Bechthold does not teach ribs arranged at least to the periphery of the cover plate.

19. Zugner teaches a protecting cover (wear resisting ring 14 and refractory concrete 15) that is attached to the lid (13) by means of ribs (ring 14) at least at the periphery of the protecting cover (ring projects above the edge of the lid 13, see Figure 1). The ring attaches the refractory concrete (15) to the lid (13) by holding the refractory cement (15) in place.

20. In regards to claims 19 and 20, Bechthold teaches wherein the protecting cover (disk 33) is attached to the lid (upper body 22a).

21. Bechthold does not teach wherein the protecting cover is attached to the lid by ribs extending to the side surfaces of said lid.

22. Zugner teaches a protecting cover (wear resisting ring 14 and refractory concrete 15) that is attached to the tubular member (11), which itself is attached to the lid (13), by ribs (wear resisting ring 14) extending to the side surfaces (see Figure 1) of the tubular member (11).

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23. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the ring and concrete of Zugner with the nozzle of Bechthold for the purpose of providing wear protection for the nozzle.

24. Claims 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bechthold (US Patent 3,633,887) as applied to claim 13 above, and further in view of Nordh (US Patent 4,748,916).

25. In regards to claim 23 and 25, Bechthold does not explicitly teach the material used to make the protecting cover or the lid.

26. In the analogous art of fluidized-bed nozzles, Nordh teaches an air nozzle that can be made from ceramic material for the benefit of making the nozzle low cost and mass producible. Furthermore, the nozzle is cast (abstract), which would imply that the entire body of the nozzle would be made from one material. See col. 3, lines 29-34.

27. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the material of Nordh with the nozzle of Bechthold for the purpose of making the nozzle low cost.

28. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bechthold (US Patent 3,633,887) as applied to claim 13 above, and further in view of Cappy (US Patent 3,921,913) and even further in view of Nordh (US Patent 4,748,916).

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29. In regards to claim 21, Bechthold does not teach means arranged at the blow opening end of the nozzle channel for forming a rising gas flow to the front of the blow opening.

30. In the analogous art of gas dispensing apparatuses, Capy teaches a gas burner (Figure 4) with means (inclined part 17 on ceramic part 11) arranged at the blow opening end of the nozzle channel for forming a rising gas flow to the front of the blow opening (see col. 3, 13-23).

31. Capy does not provide motivation to combine with Bechthold.

32. In the analogous art of fluidized-bed nozzles, Nordh teaches that nozzles in a fluidized-bed reactor must direct air-flow upwardly in order to fluidize the bed or the reactor. See col.1, lines 45-50.

33. It would have been obvious to combine the inclined part of Capy with the nozzle of Bechthold using the motivation provided in Nordh for the purpose of deflecting the gas flow out of the nozzle upwards in order to fluidize the bed in the reactor.

34. In regards to claim 22, Bechthold does not teach a smooth bump located on the upper surface of the nozzle channel.

35. In the analogous art of gas dispensing apparatuses, Capy teaches a gas burner (Figure 4) with a smooth bump (inclined part 17) located on the upper surface of the nozzle channel (between member 11 and wall 8) and extending substantially throughout the whole width thereof (inclined part 17 extends around entire circumference) and arranged at the blow opening end of the nozzle channel for forming a rising gas flow in the front of the blow opening. See Figure 4 and col. 3, lines 13-23.

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36. Capy does not provide motivation to combine with Bechthold.

37. In the analogous art of fluidized-bed nozzles, Nordh teaches that nozzles in a fluidized-bed reactor must direct air-flow upwardly in order to fluidize the bed or the reactor. See col.1, lines 45-50.

38. It would have been obvious to combine the inclined part of Capy with the nozzle of Bechthold using the motivation provided in Nordh for the purpose of deflecting the gas flow out of the nozzle upwards in order to fluidize the bed in the reactor.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy Cleveland whose telephone number is (571)270-5041. The examiner can normally be reached on Monday-Thursday 7:30-5 EST alt Friday 8:30-4 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Ortiz can be reached on (571)272-1206. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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